

WHAT IS CLAIMED IS:

1. An ink cartridge mounted, in use, on a head unit having an ink jet head and a mounting unit for receiving the ink cartridge, the mounting unit being formed with an engaging protrusion and an ink supply channel, the head unit
5 being fixedly mounted on a carriage on which a locking arm formed with an engaging pawl is swingably supported for locking the ink cartridge to the head unit, the ink cartridge comprising:

10 a bottom wall that is substantially a rectangular shape having a first side, a second side opposing the first side, a third side connecting the first side and the second side, and a fourth side opposing the third side, wherein a first engaging depression is formed in the bottom wall in a
15 position nearer to the fourth side than the third side, the first engaging depression engaging, in use, the engaging protrusion formed in the mounting unit;

a first side wall upstanding from the bottom wall along the first side;

20 a second side wall upstanding from the bottom wall along the second side;

~~a third side wall upstanding from the bottom wall~~
along the third side;

a fourth side wall upstanding from the bottom wall
25 along the fourth side;

a top wall opposing the bottom wall and connected to

the first side wall, the second side wall, the third side wall, and the fourth side wall wherein the bottom wall, the first side wall, the second side wall, the third side wall, the fourth side wall, and the top wall form a substantial
5 box shape and define an inner space;

an ink reservoir provided in the inner space for storing ink; and

an ink supply port formed in the bottom wall in a position nearer to the third side than the fourth side and
10 fluidly connected to the ink reservoir, the ink supply port engaging, in use, the ink supply channel and supplying ink in the ink reservoir to the ink channel.

2. The ink cartridge according to claim 1, wherein a second engaging depression is formed in the top wall in a
15 position corresponding to a center position between the first engagement depression and the ink supply port, the second engaging depression having a width extending in a direction parallel to a direction in which the third side extends, the engaging pawl engaging the second engaging
20 depression when the locking arm locks the ink cartridge to the head unit.

3. The ink cartridge according to claim 2, wherein the first engaging depression is formed approximately in a center between the first side and the second side.

25 4. The ink cartridge according to claim 2, wherein a first protrusion is formed in the top wall, the first

protrusion protruding upward and forming a back wall of the second engaging depression, the first protrusion having a width extending in a direction parallel to the direction in which the third side extends.

5 5. The ink cartridge according to claim 2, wherein a pair of side plates are provided one on each widthwise side of the second engaging depression.

10 6. The ink cartridge according to claim 4, wherein a pair of side plates are provided one on each widthwise side of the first protrusion.

15 7. The ink cartridge according to claim 4, wherein the top wall is formed with a first upper wall and a second upper wall, the first protrusion and the second engaging depression being located in a boundary between the first upper wall and the second upper wall, the first upper wall being formed at a height from the bottom wall lower than that of the second upper wall, the second upper wall confronting the ink supply port formed in the bottom wall.

20 8. The ink cartridge according to claim 7, wherein the second upper wall is formed with a handgrip that protrudes upward.

25 9. The ink cartridge according to claim 2, wherein a pair of ribs is provided on the fourth side wall to oppose each other with a prescribed interval, an engaging protrusion protruding from the head unit fitting into the prescribed interval when the ink cartridge is mounted in the

head unit.

10. The ink cartridge according to claim 1, wherein the internal space is partitioned into an air introduction chamber in fluid communication with air outside the ink cartridge via an air hole, a main ink reservoir in fluid communication with the air introduction chamber, and a sub ink reservoir in fluid communication with the main ink reservoir, the main ink reservoir accommodating a porous material for retaining ink, the sub ink reservoir being brought in fluid communication with the air introduction chamber enabling air to be received from the air introduction chamber when all ink in the main ink reservoir is used.

11. The ink cartridge according to claim 10, wherein the air hole is formed in the bottom wall in a position between the ink supply port and the first engaging depression.

12. An ink cartridge mounted, in use, on a head unit having an ink jet head and a mounting unit for receiving the ink cartridge, the mounting unit being formed with a first engaged portion and a second engaged portion, the head unit being fixedly mounted on a carriage on which a locking arm formed with an engaging pawl is swingably supported for locking the ink cartridge to the head unit, the ink cartridge comprising:

a bottom wall that is substantially a rectangular

shape having a first side, a second side opposing the first side, a third side connecting the first side and the second side, and a fourth side opposing the third side;

5 a first side wall upstanding from the bottom wall along the first side;

a second side wall upstanding from the bottom wall along the second side;

a third side wall upstanding from the bottom wall along the third side;

10 a fourth side wall upstanding from the bottom wall along the fourth side;

a top wall opposing the bottom wall and connected to the first side wall, the second side wall, the third side wall, and the fourth side wall wherein the bottom wall, the first side wall, the second side wall, the third side wall, 15 the fourth side wall, and the top wall form a substantial box shape and define an inner space;

an ink reservoir provided in the inner space for storing ink;

20 a first engaging portion formed in the bottom wall in a position nearer to the third side than the fourth side, the first engaging portion engaging, in use, the first engaged portion on the mounting unit; and

a second engaging portion formed in the fourth side 25 wall, the second engaging portion engaging, in use, the second engaged portion on the mounting unit.

13. The ink cartridge according to claim 12, wherein the first engaging portion is an ink supply port fluidly connected to the ink reservoir and the first engaged portion is an ink supply channel wherein in use, the ink supply port
5 supplies ink in the ink reservoir to the ink channel.

14. The ink cartridge according to claim 12, wherein a third engaging portion is further formed in the bottom wall in a position nearer to the fourth side than the third side, the third engaging portion engaging, in use, a third engaged
10 portion further formed on the mounting unit.

15. The ink cartridge according to claim 12, wherein a third engaged portion is further formed in the top wall, the third engaged portion being engaged with the engaging pawl when the locking arm locks the ink cartridge to the head
15 unit.

16. The ink cartridge according to claim 14, wherein a fourth engaged portion is further formed in the top wall, the fourth engaged portion being engaged with the engaging pawl when the locking arm locks the ink cartridge to the
20 head unit.

17. The ink cartridge according to claim 12, wherein the first engaging portion is located in a position between the third side and a reference point on the bottom wall, the reference point being defined as a point where an imaginary
25 vertical line passing via a center of gravity of the ink cartridge intersects with the bottom wall, and the second

engaging portion is located in a position opposite the position in which the first engaging portion is located with respect to the imaginary vertical line.

18. The ink cartridge according to claim 14, wherein
5 the first engaging portion is located in a position between the third side and a reference point on the bottom wall and the third engaging portion is located in a position between the fourth side and the reference point, the reference point being defined as a point where an imaginary vertical line
10 passing via a center of gravity of the ink cartridge intersects with the bottom wall, and the second engaging portion is located in a position opposite the position in which the first engaging portion is located with respect to the imaginary vertical line.

15 19. An image-forming device comprising:

an ink cartridge storing ink and formed with an ink supply port;

a head unit having an ink jet print head for ejecting ink droplets onto a recording medium, and a mounting unit
20 for detachably-mounting the ink cartridge and formed with an ink supply channel fluidly connected to both the ink supply port and the ink-jet head;

a carriage fixedly mounting the head unit and formed with a locking portion;

25 a locking arm that is an elongated shape defined by a base end and a free end and has a pressing member, the

locking arm being swingable about a swinging center near the base end and swingably movable between a first position and a second position wherein the locking arm locks the ink cartridge to the head unit when moved from the first position to the second position, causing the pressing member to press the ink cartridge; and

wherein a condition in which the ink cartridge is pressed by the pressing member is maintained by abutment of the base end of the locking arm with the locking portion formed in the carriage.

20. The image-forming device according to claim 19, further comprising a spring member for urging the locking arm in a direction toward the first position.

21. The image-forming device according to claim 20, further comprising a swinging shaft supported by the carriage, and wherein the locking arm is formed with an elongated hole through which the swinging shaft penetrates, the locking arm being movable within the elongated hole extending in a pressing direction in which the pressing member presses the ink cartridge, thereby allowing the locking arm to swing around the swinging shaft as the swinging center and also to move toward the pressing direction.

22. The image-forming device according to claim 21, wherein the locking arm is formed with an unlocking button for unlocking the ink cartridge by disengaging the base end

of the locking arm from the locking portion formed in the carriage.

23. The image-forming device according to claim 22, wherein the carriage is formed with a head supporting region for supporting the ink jet head, the head supporting region being substantially a rectangular shape having a first side, a second side opposing the first side, a third side connecting the first side and the second side, and a fourth side opposing the third side, a rear wall upstanding from the head supporting region along the second side, a first side wall upstanding from the head supporting region along the third side, and a second side wall upstanding from the head supporting region along the fourth side, the carriage having an open space above the head supporting region and above the first side of the head supporting region, and wherein the mounting unit is formed with a bottom wall that is substantially a rectangular shape having a first side, a second side opposing the first side of the bottom wall, a third side connecting the first side and the second side of the bottom wall, and a fourth side opposing the third side of the bottom wall, a rear wall upstanding from the bottom wall along the second side of the bottom wall, a first side wall upstanding from the bottom wall along the third side of the bottom wall, and a second side wall upstanding from the bottom wall along the fourth side of the bottom wall wherein the rear wall, the first side wall and the second side wall

of the mounting unit define an ink cartridge receiving space, the mounting unit having an open space above the bottom wall of the mounting unit and above the first side of the bottom wall, thereby allowing a user to easily mount or remove the ink cartridge.

24. The image-forming device according to claim 23, wherein the locking portion is formed in the rear wall of the carriage.

25. The image-forming device according to claim 24, wherein the pressing member presses the ink cartridge against the bottom wall of the mounting unit.

26. The image-forming device according to claim 24, wherein a movable distance of the locking arm within the elongated hole is long enough to disengage the base end of the locking arm from the locking portion formed in the rear wall of the carriage.

27. An image-forming device comprising:

an ink cartridge storing ink and formed with an ink supply port;

a head unit having an ink jet print head for ejecting ink droplets onto a recording medium, and a mounting unit for detachably mounting the ink cartridge, the mounting unit being formed with an engaging protrusion and an ink supply channel fluidly connected to both the ink supply port and the ink jet head;

a carriage fixedly mounting the head unit and formed

with a locking portion; and

5 a locking arm that is an elongated shape defined by a base end and a free end and has a engaging pawl and a pressing member, the locking arm being swingable about a swinging center near the base end and swingably movable between a first position and a second position wherein the locking arm locks the ink cartridge to the head unit when moved from the first position to the second position, causing the pressing member to press the ink cartridge,

10 wherein the ink cartridge comprises:

a bottom wall that is substantially a rectangular shape having a first side, a second side opposing the first side, a third side connecting the first side and the second side, and a fourth side opposing the third side, wherein a first engaging depression is formed in the bottom wall in a position nearer to the fourth side than the third side, the first engaging depression engaging the engaging protrusion formed in the mounting unit;

20 a first side wall upstanding from the bottom wall along the first side;

a second side wall upstanding from the bottom wall along the second side;

a third side wall upstanding from the bottom wall along the third side;

25 a fourth side wall upstanding from the bottom wall along the fourth side;

a top wall opposing the bottom wall and connected to the first side wall, the second side wall, the third side wall, and the fourth side wall wherein the bottom wall, the first side wall, the second side wall, the third side wall, the fourth side wall, and the top wall form a substantial box shape and define an inner space; and

an ink reservoir provided in the inner space for storing ink, the ink supply port being formed in the bottom wall in a position nearer to the third side than the fourth side and fluidly connected to the ink reservoir, the ink supply port engaging the ink supply channel and supplying ink in the ink reservoir to the ink channel.

28. The image-forming device according to claim 27, wherein a second engaging depression is formed in the top wall in a position corresponding to a center position between the first engagement depression and the ink supply port, the second engaging depression having a width extending in a direction parallel to a direction in which the third side extends, the engaging pawl engaging the second engaging depression when the locking arm locks the ink cartridge to the head unit.

29. The image-forming device according to claim 28, wherein a pair of ribs is provided on the fourth side wall to oppose each other with a prescribed interval, an engaging protrusion protruding from the head unit fitting into the prescribed interval when the ink cartridge is mounted in the

head unit.

30. An image-forming device comprising:

an ink cartridge storing ink and formed with an ink supply port;

5 a head unit having an ink jet print head for ejecting ink droplets onto a recording medium, and a mounting unit for detachably mounting the ink cartridge, the mounting unit being formed with a first engaged portion and a second engaged portion;

10 a carriage fixedly mounting the head unit and formed with a locking portion; and

a locking arm that is an elongated shape defined by a base end and a free end and has a engaging pawl and a pressing member, the locking arm being swingable about a
15 swinging center near the base end and swingably movable between a first position and a second position wherein the locking arm locks the ink cartridge to the head unit when moved from the first position to the second position, causing the pressing member to press the ink cartridge,

- 20 wherein the ink cartridge comprises:

a bottom wall that is substantially a rectangular shape having a first side, a second side opposing the first side, a third side connecting the first side and the second side, and a fourth side opposing the third side;

25 a first side wall upstanding from the bottom wall along the first side;

a second side wall upstanding from the bottom wall along the second side;

a third side wall upstanding from the bottom wall along the third side;

5 a fourth side wall upstanding from the bottom wall along the fourth side;

a top wall opposing the bottom wall and connected to the first side wall, the second side wall, the third side wall, and the fourth side wall wherein the bottom wall, the
10 first side wall, the second side wall, the third side wall, the fourth side wall, and the top wall form a substantial box shape and define an inner space;

an ink reservoir provided in the inner space for storing ink;

15 a first engaging portion formed in the bottom wall in a position nearer to the third side than the fourth side, the first engaging portion engaging the first engaged portion on the mounting unit; and

a second engaging portion formed in the fourth side
20 wall, the second engaging portion engaging the second engaged portion on the mounting unit.

31. The image-forming device according to claim 30, wherein a third engaging portion is further formed in the bottom wall in a position nearer to the fourth side than the
25 third side, the third engaging portion engaging a third engaged portion further formed on the mounting unit.

32. The image-forming device according to claim 30,
wherein a third engaged portion is further formed in the top
wall, the third engaged portion being engaged with the
engaging pawl when the locking arm locks the ink cartridge
5 to the head unit.

33. The image-forming device according to claim 31,
wherein a fourth engaged portion is further formed in the
top wall, the fourth engaged portion being engaged with the
engaging pawl when the locking arm locks the ink cartridge
10 to the head unit.